Common Experiment Workbook (Formerly *art* Workbook)

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Outline

- Introduction
- Elements of Documentation
  - Defines some language.
- Overview of the *art* Documentation
- Relationship of the *art* documentation to the per experiment documentation.
- Targets for May 1

Introduction

- The *art* workbook is part of a much broader documentation project.
- The purpose of this talk is to sketch the broader project to show where the *art* workbooks within that broader project.
- It was clear in our previous meeting that we need to carefully define some language.

Target Audience

- Physicists (users and developers) on current and future experiments that use SCD supported software.
  - Including new experiments evaluating *art*. (eg. Darkside50)
- Some user levels:
  - Novice
    - Needs a grand tour, without a lot of detail.
  - Intermediate
    - Needs complete, well indexed and well cross-referenced explanations of how things work and how to use them.
  - Expert
    - Quickly find API details and a high level overview of functionality.
- A non-user role
  - Technical Developer (of art, for example).

Stakeholders

- The target audience
- Documentation developers
  - Heavey, Kutschke
  - Consultants:
    - Kowalkowski, Paterno, Green
  - Others for UPS/UPD, Grid, build system …
- SCD Management

What Software Will be Included in this Documentation Project?

- All software supported by SCD for use by the target audience.
- Including:
  - *art*
  - SAM
  - Grid software, broadly construed
  - Any in-house elements of the tool chain on which the above depends
  - …. what have I forgotten
- Don't rewrite existing documentation: link to it.

Two Main Pieces

- A work-at-your-own pace tour of how to get started and how things work.
  - Minimal details
  - We call this the *Workbook*
- The complete details, table of contents, index, glossary ….
  - We call this the *User Guide*
- Other pieces described later.

The Rest of this Presentation

- Sketch the elements of the complete documentation suite
- Discuss how this outline addresses the three roles described on the previous page.
- Some details on the short term deliverables
  - art Workbook
  - art Users Guide

Elements of Documentation

- Prerequistes
- *Workbooks* – sets of *Exercises*
- *User Guide*
- *Reference Manual (API)*
- *Technical References*
- *External References*
- *Gap Filler Documentation*
- *Discussion forum*
- Glossaries and Indices
- Other …
- All cross-referenced
- Scope each correctly and understand interfaces

Items in blue are defined on the following pages

Definition: *Exercise*

- Introductory text.
- Some example code to build and run.
  - It must ``just work".
- Explanatory text
  - Explains major ideas introduced in the exercise.
  - Refers to detailed information in other *Exercises*, in other *Workbooks*, and in the *Users Guide*
  - There should few direct references to the *Reference Manual* and no references to the *Technical Manual (different audiences).*
- Suggested *activities*:
  - Modify code or config file, rebuild and rerun
  - Where appropriate, answers to the *activities*.

Definition: *Workbook*

- A set of *Exercises*
  - Inherently sequential: Exercise N assumes that the user is familiar with all material in Exercises 0 … N-1.
  - Sometimes the last few exercises will be independent of each other and may be done in any order.
- The normal entry point for a new user.
- Gives a grand tour of the ideas and tools.
  - Shows the user where the detailed documentation is
- Helps to define language and ideas that the user needs to understand the rest of the documentation.

Definition: *Users Guide*

- Everything that the user needs to know to make effective use of the tool:
  - Few people will read this cover to cover.
  - Table of Contents, index, glosssary are all critical.
- May refer to the *Workbook*.
- Does not explain implementation details.
- Exercises will often refer into it.
- Appendices are a natural location for
  - Best practices, especially environment specific ones.
  - *Gap Filler Documentation*
  - Anything else that has no better home.

Definition: *Reference Manual*

- Documents the API
- May refer to the *Users Guide* for a users view of what the code does.
- May refer to the *Technical Manual* to explain how the internals work.
- Often auto-generated from annotated source code; eg Doxygen.
  - Plus …

Very Strongly Recommend

- Keep the roles of the *Users Guide* and *Reference Manual* distinct – it's very tempting, but a very bad idea, to mix them together.

Definition: *Technical Manual*

- The inner details of how it all works.
- Target audience is developers and maintainers, both current and future.
- Some motivated users will look at it but they are not the target audience.

Definition: *External References*

- Any material that is not part of this documentation project
  - ROOT, Geant4, CLHEP and boost documentation
  - C++ language reference
  - STL reference
  - Some C++ best practices documents
  - Existing SAM documentation
  - Existing Grid documentation
  - …

Definition: *Gap Filler Docs*

- Fill gaps in existing documentation
  - For docs that we do not own.
  - Prefer doc owners to improve their product but …
- For example:
  - For parts of CLHEP, only docs are the header files:
    - Good enough for users with intermediate C++ skills
    - Not good enough for beginners; what is a .icc file?
    - Beginners see this very early in their learning
    - Hep3Vector, SystemOfUnits, Matrices
- Probably appendices to the Users Guide?

Definition: *Discussion Forum*

- A place for users to ask questions of each other and of the developers.
- Also a place to give feedback to the documentation team.
- Candidate: Sharepoint.
- How does this interact with the existing issue tracking sysem (in redmine) ?

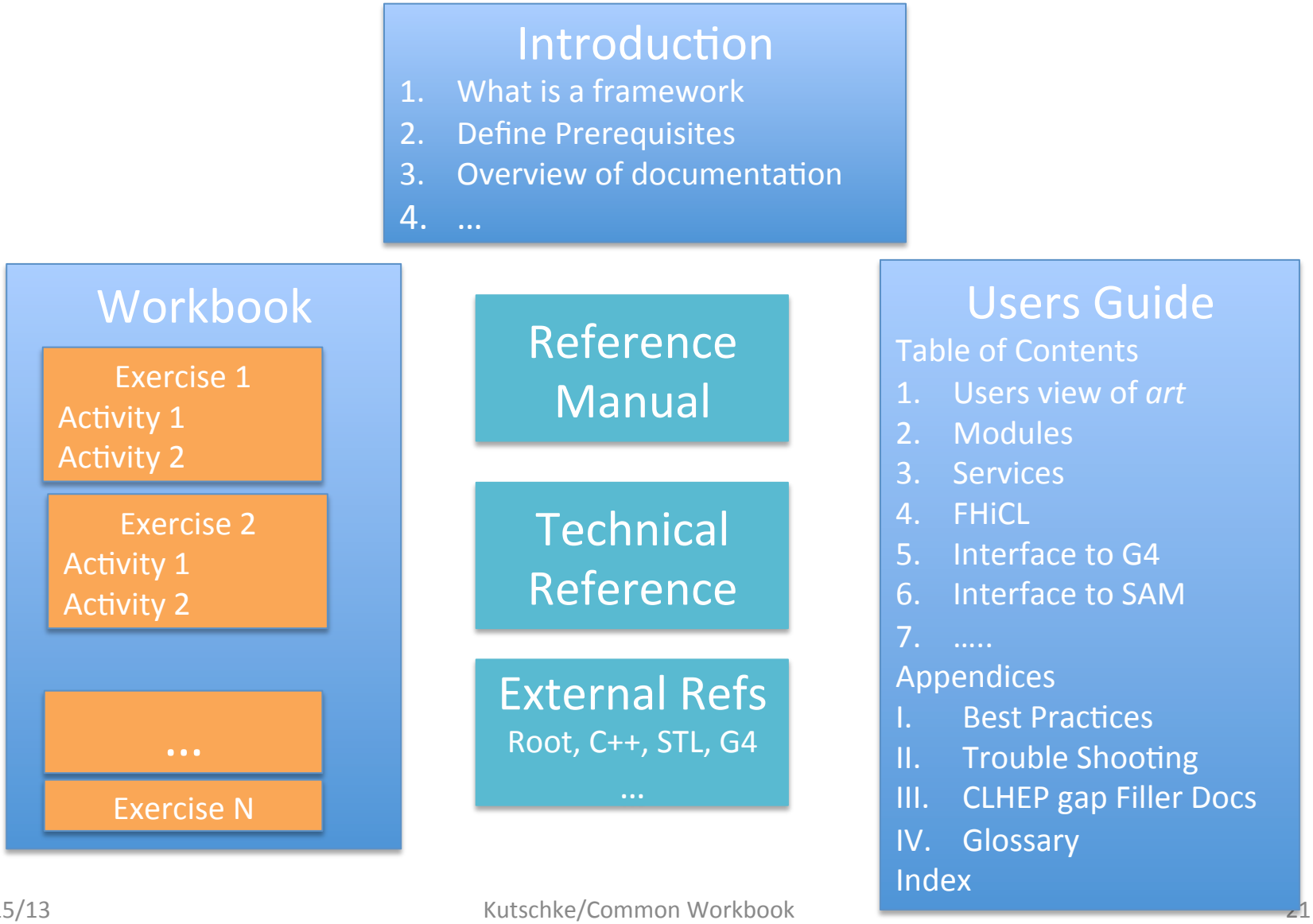
Review: Terms Defined So Far

- *Exercise*
- *Activity*
- *Workbook*
- *Users Guide*
- *Reference Manual*
- *Technical Manual*
- *External Reference*
- *Gap Filler Documentation*
- *Discussion Forum*

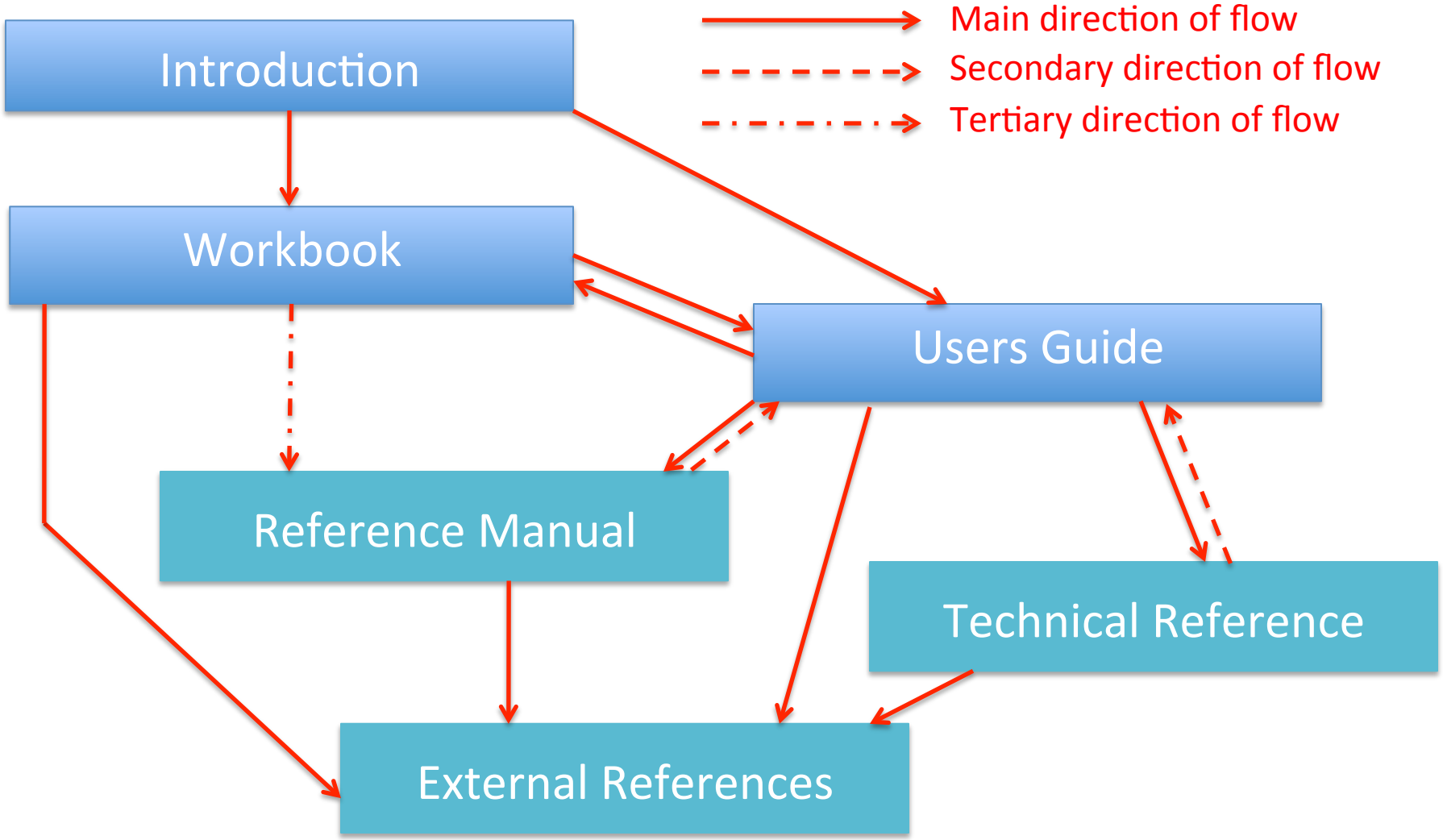
Matching Elements with Level

- Novice
  - Needs a guided tour, without a lot of detail.
  - Workbook
- Intermediate
  - Needs complete, well indexed, and well cross-referenced explanations of how things work and how to use them.
  - Users' Guide
- Expert/Developer
  - Quickly find API details and a high level overview of functionality.
  - Reference Manual
- Art developer
  - Technical Reference

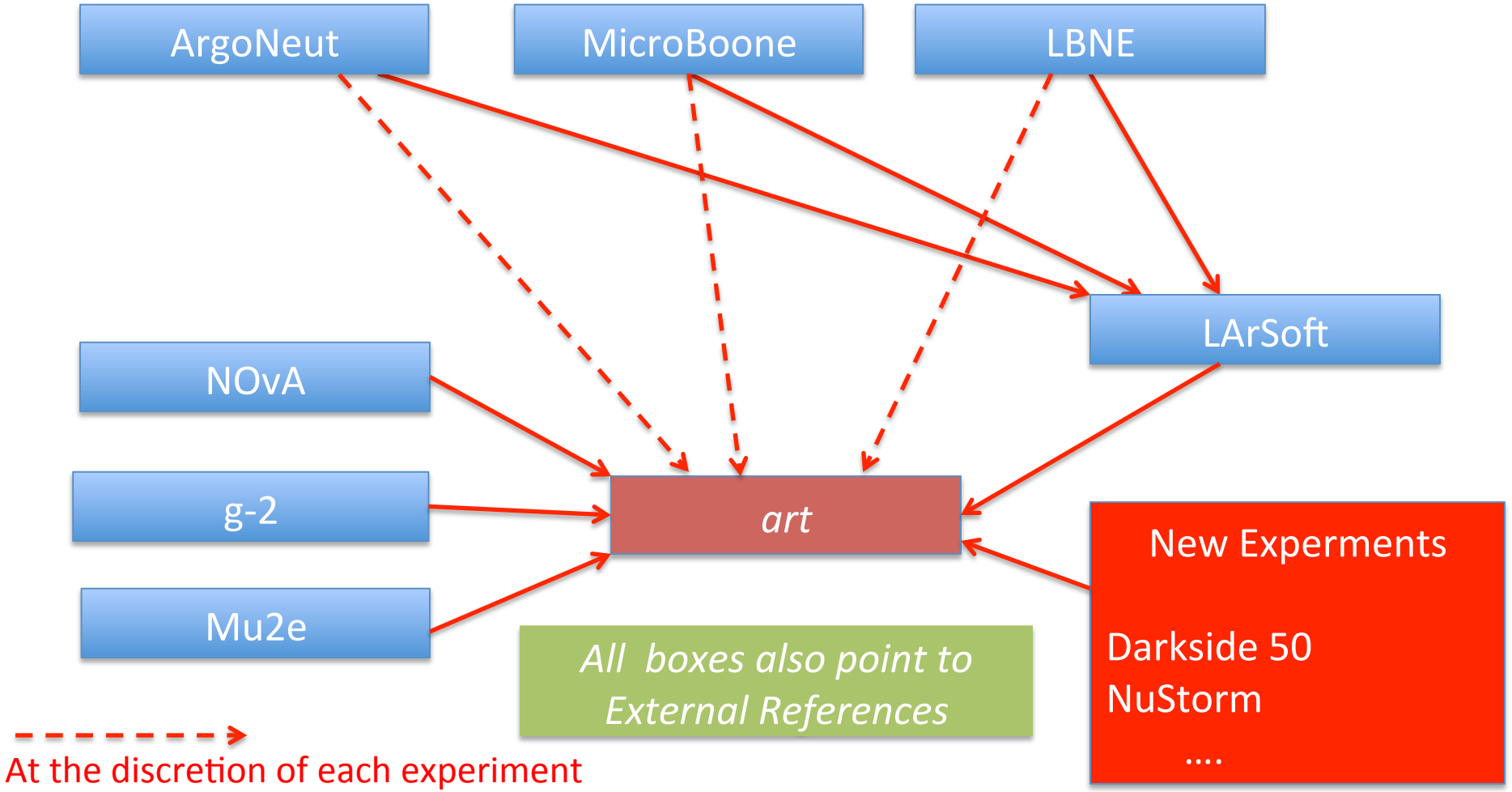
The *art* Documentation Suite



Hierarchy of The Elements



Relationship of *art* Documentation to Documentation of each Experiment



About SAM and the Grid

- Existing SAM and grid documentation are *External References*.
- Details of the interactions among SAM, *art* and the grid workflow belongs in the *art Users Guide*
- Where do workbook exercises belong?
  - TBD
    - In the *art* workbook?
    - In the per experiment workbooks (or equivalent)?
    - The issue is what SAM data sets and VO will be used for the exercise; these are experiment specific.

About ROOT

- Don't repeat existing ROOT documentation.
- Gap Filler Documentation
  - Where to find the ROOT documentation.
    - Any tricks for using it efficiently?
  - ROOT can be used in many ways.
    - Describe some of the choices *art* made and why.
  - Recommendations for best practices of using ROOT in the *art* environment.
    - May be somewhat experiment specific?

Goals for May 1

- Introduction deployed
- Workbook and Users Guide.
  - Deployed in outline form with some content …
- Some number of Workbook exercises, plus the backing documentation in the Users Guide.
  - Tested and deployed.
  - RK: prefers fewer done well to more done less well.
- Understand what it will take to deliver the full documentation project.

Draft Outlines

- Draft outline for the *art* Workbook
  - https://cdcvs.fnal.gov/redmine/projects/art-workbook/wiki/Rob's_Outline
- Draft outline for the *art* Users Guide
  - https://cdcvs.fnal.gov/redmine/projects/art-workbook/wiki/Rob's_Reference_Manual_Outline
- Wiki for our working notes.
  - https://cdcvs.fnal.gov/redmine/projects/art-workbook

Technology Choice

- Requirements:
  - Version control
    - Support for structural revisions on the fly
      - Add new exercise/chapter
      - Split exericise/chapter into two
    - Multiple versions available at the same time.
  - Produce online-friendly and printer-friendly output.
- We are currently using:
  - LaTeX + git (source code management)
  - latex2html or equivalent

Anne's Role: Editor and Tech Writer

- Deploy and maintain the outline on the site.
- Integrate existing material into the outline
  - Test that exercises work
  - Turn rough material from SME into the real deal.
  - Provide consistent look and feel
- Bring CMS experience
- Identify and keep records of
  - Undefined terms and ideas
  - Missing link targets
  - Existing material not (yet) incorporated
- Feedback to me on what is working and what is not, from the editor's point of view.
- Work with me to keep pressure on SMEs to produce the missing content.

Status of Workbook Code

- Advanced prototype working today.
  - In a git repository.
  - Based on a toy detector
  - Design includes feedback from Kowalkowski, Paterno, Green, Lyon, Rebel and from my experience with summer 2012 Mu2e workshop.
- First draft available on GPCF machines
- Planned features will be complete in a few weeks
  - A few working days of my time.
- Expect new features to be added over time

Status of LaTeX Source

- LaTex + git
  - Technology is proven
  - Gaining experience